

REMARKS/ARGUMENTS

Objection to Claim 16

Claim 16 has been objected to by the Examiner for the redundant use of the term
5 “surface”. A correction has been made to delete the redundant term “surface” in the
amendment for Claim 16 in accordance to Examiner’s suggestion. No new matter has
been entered by the above amendment.

10 **Rejection of Claims 1, 3-8, and 10-16 under 35 U.S.C. 102(b) as being anticipated by
Chang (US Patent 5,831,330).**

Response:

15 Claim 1 of the present invention recites a scribe line structure, in which the scribe
line structure includes a substrate, a plurality of dielectric layers having at least a process
monitor pattern on the substrate, and a dummy metal structure formed on the substrate.
The process monitor pattern is preferably set in the scribe line region of the substrate, and
the dummy metal structure is exposed in the scribe line region and connected to the
20 process monitor pattern.

Specifically, the process monitor pattern of the claimed invention is used as a
monitoring structure during different stages of the fabrication process. The metal
structure disclosed by Chang in the die seal ring region however is specifically used as a
25 supporting structure and serves no means for monitoring at different stages of the
fabrication process.

Applicant asserts that metal lines or plugs formed in die seal ring region are typically larger than the area of other device regions and these metal lines or plugs are specifically used to enforce the overall strength of the structure and provide no means for monitoring during various stage of the fabrication cycle. Structures used for process monitoring are typically formed in the scribe line region.

Inspection of Fig. 3 and column 2 lines 33-35 of Chang will reveal that the metal structure disclosed by Chang is formed in a die seal structure region 7, in which the die seal structure region 7 is located between the integrated circuit region 3 and the scribe line region 2. Hence, in contrast to the claimed invention of forming the metal process monitor pattern in the scribe line region, the metal structure taught by Chang is positioned in the die seal structure region.

Additionally, since the structure disclosed by Chang is principally used as a support, applicant asserts that every layer of the metal structure disclosed by Chang from top to bottom must also be composed of metal. In contrast to Chang, the position of the dummy metal of the claimed invention is not limited to be placed both on top and below the process monitor pattern. For instance, the dummy metal of the claimed invention can be formed only on top of the process monitor pattern, as shown in Fig. 3 of the claimed invention.

Moreover, due to the dummy metal of the claimed invention is exposed in the scribe line region for absorbing laser energy and releasing heat, the dummy metal would eventually be sawed during the sawing stage of the wafer. The metal structure disclosed by Chang on the other hand is formed in the die seal structure region to serve as a supporting structure, and thus would not be sawed during the sawing stage of the wafer.

Since the structure and the functionality of the metal structure disclosed by Chang is

significantly different from the scribe line structure of the claimed invention, applicant asserts that Chang does not teach the scribe line structure as per the limitation disclosed in claim 1 of the present invention. Reconsideration of claim 1 is respectfully requested. As claims 2-7 are dependent upon claim 1, applicant asserts that if claim 1 is found
5 allowable, claims 2-7 should additionally be found allowable. Reconsideration of claims 2-7 is politely requested.

Claim 8 of the present invention recites a scribe line structure, in which the scribe line structure includes a substrate, a plurality of dielectric layers having at least a process
10 monitor pattern on the substrate, and a heat irradiative structure formed in the dielectric layers. The process monitor pattern is preferably set in the scribe line region of the substrate, and the heat irradiative structure is exposed in the scribe line region and connected to the process monitor pattern.

15 Similar to the arguments made for claim 1, the process monitor pattern of the claimed invention is used as a monitoring structure during different stages of the fabrication process. The metal structure disclosed by Chang in the die seal ring region however is specifically used as a supporting structure and serves no means for monitoring at different stages of the fabrication process.

20 Inspection of Fig. 3 and column 2 lines 33-35 of Chang will reveal that the metal structure disclosed by Chang is formed in a die seal structure region 7, in which the die seal structure region 7 is located between the integrated circuit region 3 and the scribe line region 2. Hence, in contrast to the claimed invention of forming the metal process
25 monitor pattern in the scribe line region, the metal structure taught by Chang is positioned in the die seal structure region.

Additionally, since the structure disclosed by Chang is principally used as a support,

applicant asserts that every layer of the metal structure disclosed by Chang from top to bottom must also be composed of metal. In contrast to Chang, the position of the heat irradiative structure of the claimed invention is not limited to be placed both on top and below the process monitor pattern. For instance, the heat irradiative structure of the
5 claimed invention can be formed only on top of the process monitor pattern, as shown in Fig. 3 of the claimed invention.

Moreover, due to the heat irradiative structure of the claimed invention is exposed in the scribe line region for absorbing laser energy and releasing heat, the heat irradiative
10 structure would eventually be sawed during the sawing stage of the wafer. The metal structure disclosed by Chang on the other hand is formed in the die seal structure region to serve as a supporting structure, and thus would not be sawed during the sawing stage of the wafer.

15 Since the structure and the functionality of the metal structure disclosed by Chang is significantly different from the scribe line structure of the claimed invention, applicant asserts that Chang does not teach the scribe line structure as per the limitation disclosed in claim 8 of the present invention. Reconsideration of claim 8 is respectfully requested. As claims 9-16 are dependent upon claim 8, applicant asserts that if claim 8 is found
20 allowable, claims 9-16 should additionally be found allowable. Reconsideration of claims 9-16 is politely requested.

**Rejection of Claims 2 and 9 under 35 U.S.C. 103(a) as being unpatentable over Chang
25 (US Patent 5,831,330) in view of Chooi et al (US Patent 6,284,657 B1).**

Claim 2 is dependant upon Claim 1. Applicant asserts that if Claim 1 is found allowable, then Claim 2 should additionally be found allowable as being dependant on

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Claim 1.

Similarly Claim 9 is also dependant upon Claim 8. Applicant asserts that if Claim 8 is found allowable by the Examiner, then Claim 9 should also be allowed as they are dependant on Claim 8.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Sincerely yours,



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Note: Please leave a message in my voice mail if you need to talk to me. (The time in D.C. is 13 hours behind the Taiwan time, i.e. 9 AM in D.C. = 10 PM in Taiwan.)